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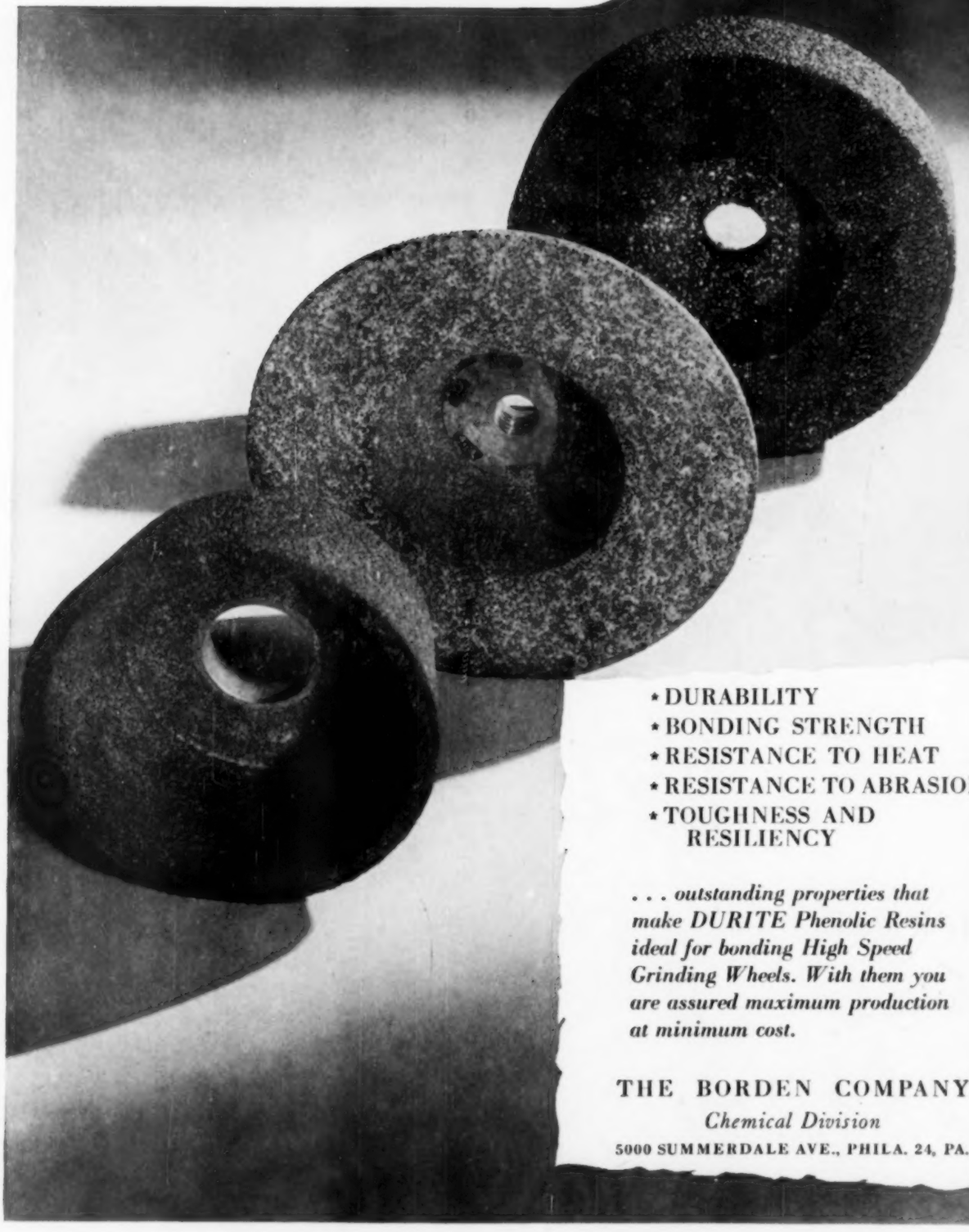

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National Office, 409 Security Bank Bldg., Athens, Ohio

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COVER DESIGN is by JEAN O. REINECKE, industrial designer and artist, who has long been a moving force in the Chicago Section and National SPE.

It's Your SPE

A TECHNICAL SOCIETY is like a good bank; you get out of it what you put into it—plus interest.

It is the earnest contention of your humble editor that there are many of you who want to help the SPE grow and become of maximum usefulness to the industry and to the individual members. The question is, "What can I do?"

You can do plenty!

Here's how.

1. ATTEND MEETINGS! A group with a good attendance is a magnet for the better speakers; and conversely, poor attendance keeps them away. Don't wait for a genius to speak, but attend regularly and the best speakers will seek you. Certainly you may not learn something new every night, but every piece of information you have is more ammunition in defending your business against the inroads of competition and in pleasing your customers.

2. TELL THEM! Let the officers of your section know you are there and ready to help. When there is a good meeting, tell the men responsible. Your pleasure will give them satisfaction and spur them on to better efforts. When there are poor meetings, offer suggestions for betterment.

3. SEEK COMMITTEE WORK! If you can, seek committee work, and when you are on a committee, do the best job you can—it is important. If there is no immediate work like that on hand, then drop a postcard or letter to the Society of Plastics Engineers, 409 Security Bank Bldg., Athens, Ohio.

Say what you would like to do, or are best qualified to do, or even just that you are ready to work. The letter will be forwarded to the proper National committee, and opportunity will be offered you to take part in the vital affairs on which the progress of the SPE depends.

4. PUBLICITY! Publicity is not a one man job, it is everybody's job! If you, or someone you know, changes jobs, is promoted, marries, receives an honor, or anything of the sort, drop a postcard to J. H. Day, Athens,

(Please turn to page 4)

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Low-cost PLASTICIZER now available in quantity

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Manual of Procedure

CREDENTIALS COMMITTEE

OF THE

SOCIETY OF PLASTICS ENGINEERS

The credentials committee of the local section should consider itself a major committee of the section. This is the group which allows any applicant to enter the Society and establishes the grade of membership obtained. Accordingly the strength of local sections and of the national S.P.E. lies in the efficient functioning of local credentials committees which control the type and quality of the members entering the organization. Since we are a national society it is best that each local section function independently but in a standard manner. It is with this purpose in mind that the national credentials committee herein establishes a definite pattern for all local sections.

GENERAL

The national credentials committee's function is to see that each local section conforms to this standard. The local section will establish the class of membership of each applicant. The local section will also request change of membership or advance in membership when necessary additional time has been served. In so far as possible the national committee will act upon the recommendations of the local sections but in all cases involving a dispute the national committee can over-rule the local committee.

OUTLINE FOR LOCAL CREDENTIALS COMMITTEE

(1) A credentials committee consisting of a chairman and at least two (2) other local members (any grade) shall be appointed by the local president each year.

(2) It shall be the function of this committee to pass upon every application received by the local section and establish the grade of membership of each applicant.

(3) A form for this purpose will be provided by the national office and will be entitled "Application for Membership, the Society of Plastics Engineers, Inc." The local committee is not to honor any application unless on the new form No. 100.

(4) The applicant must fill out this form in ink or typewriting. It must be complete in every detail especially under qualifying experience, or the local section must send it back for this information. Initiation fee must accompany the application for further action. This fee should not be waived.

(5) Three (3) references should be furnished and at least two (2) should be members of the society in good standing.

(6) The local committee should check these references on the form provided. The members' references should be carefully observed for any comments.

(7) The committee should then decide the applicant's class of membership using the following information.

There are three (3) classes of qualifying experience in (a) tools, (b) materials, (c) processes. Predicated upon the number of years of technical experience in one or all of these classes an applicant will receive his classification according to the following table.

0—2 years	Junior Member
2—5 years	Associate Member
5—10 years	Member
10—	Professional Member

Credit for education can be substituted for experience as follows:

B. S. in Technical Subject	4 years
M. S. in Technical Subject	5 years
Ph. D. in Technical Subject	7 years
Other degrees	2 years

Teachers, and users, merchandisers, and sales personnel in the plastics field will fall into one of three classes but the local committee must judge the degree of technical skill required just as they must judge the technical skill necessary for every other applicant seeking membership. Receiving a salary from a plastics concern will not constitute experience. This is primarily a technical society and technical skill or experience is to be the first prerequisite for membership. Thus it is possible for a person who has been employed by a plastic manufacture for 5 years to receive less than 5 years qualifying experience if his job does not require full time technical skill.

(8) The local committee has the right at any time to request of the applicant additional information or proof of experience. One suggested method is the interrogation of the applicant by a friendly member along lines of his technical knowledge.

(9) The local committee should place any additional information which leads to their decision as to class of membership on the application to aid the national committee.

(10 After the application is processed and signed by the chairman and initiated by two (2) other members of the committee it should be passed on to the national office with the forms checking the references furnished.

(11) The national office will then stamp the application as OK if (1) the initiation fee is received, (2) the procedure requirements are fulfilled, (3) references are checked.

(12) The application will then be sent out to the national committee for action.

(13) The national committee will then act on the application and send it back to the national office which will then notify the applicant and the local section of the committee action.

(14) The applicant if not satisfied has the right of written appeal. This shall be in duplicate, one being sent to the local committee and one to the national office. Whatever action the local board takes (and they must act again) their appeal along with their action is sent to the chairman of the national committee. The national office will send the second copy of the appeal along with the original application to the national committee. The national board of directors will then act on the appeal.

(15) Every member has the right to ask for advance in membership at year intervals. The local secretary with the aid of the local credentials committee should set up a file which automatically will advance in May of each year the grade of each member as he receives the necessary qualifying experience. As these qualifications are fulfilled the local committee should check the person's employment, (e.g. is he still using his technical skill?) and then send the names and grades of membership to the national office.

(16) The national office after checking the applications for advancement against the original applications will give them the appropriate marking and forward them to the national credentials committee for action.

MEMBERS VOTE CONSTITUTION CHANGES—MINUTES OF NATIONAL COUNCIL MEETING

The National Council of the Society of Plastics Engineers met at the Waldorf-Astoria Hotel in New York City March 31, 1949.

Mario Petretti, president, read the results of the recent ballot sent to the membership on constitutional changes. All proposed changes were voted for, a total of 730 ballots being received. The SPE constitution is now changed to read as follows:

1. Article II Membership
Section 1 C-5

The Membership of the SOCIETY shall consist of Members, Associates, Juniors, Honorary Members, Life Members and Professional Members.

2. Section 2 C-6

A Professional Member to be a person having ten years accredited experience qualification within the Plastics Industry in either tools, materials or processes.

Or an aggregate of ten years including the following educational credits in lieu of experience: Ph.D.—7 years credit, M.S.—5 years credit, B.S.—4 years credit. A Bachelors Degree in any non-technical school shall receive a 2 year experience credit.

3. Section 7 C-11

Professional Member, Member and Life Members shall have the right to vote and hold elective office and participate in all of the affairs of the Society.

1. Section 7 C-12

Associate and Junior Members shall have all the rights and privileges of regular Membership with the exception of holding NATIONAL OFFICE.

5. Section 7 C-12 A.

Honorary Members shall have all privileges except the right to vote and hold elective office.

6. Article III Admission to Membership
Section 1 C-18

Any Member of the COUNCIL may nominate any Member in good standing who possesses the qualifications provided in C-10 hereof for election as a Life Member. Such nomination shall be presented in writing and must include the reasons for the NOMINATION. The election of a Life Member shall be by letter-ballot of the COUNCIL and 5 dissenting votes shall defeat election. The Nomination and Election shall be governed by the Rules and By-Laws.

7. Article V Meetings of the Society
Section 2 C-24

Written notice of all business meetings of the Members, stating the time and place, shall be sent to each Member by first class mail at least 20 days prior to the date of such meeting or shall be published in the previous months issue of the Official Publication.

8. Article VI Management of the Society
Section 2 C-27

The COUNCIL shall consist of DIRECTORS, ONE from each GEOGRAPHIC SECTION, who shall be elected by the Members of the Geographic Section they represent, and a DIRECTOR AT LARGE who shall be the retiring NATIONAL PRESIDENT, such DIRECTORS shall be Members in good standing. The DIRECTORS shall be elected as provided in theBy-Laws.

9. Article IX The Advisory Board
Section 1 C-40 and 41

Since we now have a DIRECTOR from each SECTION elected by the Members of the Section the ADVISORY BOARD is non-operative so it should be DELETED from the CONSTITUTION.

As a result of final decisions as to the exact provisions of the constitution, it is planned that an early printing be made so that every member can be sent a copy.

It was decided that the Society should charge a three dollar fee for professional grade membership certificates, which will be prepared only at the member's request.

Mr. Bailey relayed a request from the Navy Department for a list of names and qualifications of engineers in the plastics business. It was agreed by the Council that the records which would be assembled in regard to establishment of professional grade membership would serve this purpose, and therefore should be relayed to the Baltimore-Washington Section for preparation for Navy purposes.

The last indebtedness of the National SPE was paid off with presentation of checks for $673 to Chicago Section, and $350 to the Detroit Section.

The next meeting of the National Council was set for Thursday, May 26th at the Edgewater Beach Hotel in Chicago. This will coincide with the annual S.P.I. meeting.

IT'S YOUR SPE

(Continued from page 1)

Ohio. See to it that your local news editor gets his report in on the last local meeting, and on plans for future meetings. If he knows that his section is really interested, he will do a better job and you will have more reliable information on your own section activities, which will in turn increase the interest in local meetings.

Word of mouth publicity is important. Tell your friends about SPE, and urge fellow members to attend meetings.

When there is an especially interesting talk, see if you can't get a copy sent to J. H. Day at Athens, Ohio, and get it published in this magazine for the benefit of the other members of SPE.

Plastics In Europe And Molding Are Discussed

By GEORGE W. MARTIN

The regular April meeting of the Western New England Section was held on the sixth at the Hotel Sheraton in Springfield.

Sherwood Young presided over the meeting which came to order at 8.00 P.M. An overflow gathering had enjoyed an excellent dinner and drawings for two door prizes—one for guests and one for members. The door prizes were through the courtesy of the Improved Paper Machinery Corporation.

The program was featured by two outstanding speakers, Mr. Islyn Thomas, president of the Thomas Manufacturing Company, and Mr. Walter J. A. Connor of the U. S. Fibre and Plastics Corporation.

The first speaker, Mr. Thomas, had chosen for his talk "A Review Of Current Plastics Conditions In Europe." Having just returned from a tour of England and the Continent, the speaker was prepared with first-hand information.

Briefly presenting the conditions in France, Mr. Thomas observed that they are much more informed as to our industrial situation than we are of theirs. This is accomplished mainly through our extensive advertising which is of considerable interest to them.

The main weakness of French Industry, in the speaker's opinion is the shortcomings of management, coupled with the lack of ability to buy any new products that are not absolutely essential. These factors, along with the "unhurried" attitude that prevails in this country, would give one the opinion that their industrial potentialities fall far short of those of the United States.

In reviewing the German situation, the speaker did not go into detail, due in part to the fact that much of the industry was inaccessible to him. Apparently the largest item in their plastics picture is the new vinyl soles for shoes. As for molding material, they can produce only six hundred tons of injection material per month, at their peak, which will give us very little competition to worry about.

Mr. Thomas spent the remainder of his talk reviewing the industry in England. There they are still using many old German machines and many home-made verticals. The speaker

(Please turn to page 12)

PLASTICS REVIEW

By JOHN M. DeBELL

Debell and Richardson

Nature did a pretty good job with high polymers. It is a significant tribute that all the earlier technical work was devoted to matching the properties of such useful natural materials as rubber, silk, cellulose, leather, wood, wool, mica, absestos, sheep intestines, and a host of others.

I like to think of these assaults on nature as a military operation. We have a fair idea of the objectives which we wish to accomplish. We select specially trained individuals and support them with previous experience, with tools that are necessary for the job, and with auxiliary services of all description: much as the offensive general disposes his means to enable his infantry to gain ground with a minimum of time, effort, and loss. Let us consider a few of the salients which have been driven into high polymer territory and note occasionally some additional objectives to be gained.

As is so often the case, many of the earlier results came from the observations of alert experimenters who were just trying to obtain something useful; they also involved common sense. Note Goodyear's work in vulcanizing rubber with sulphur so that it would not crack in the cold or stick on a warm day. Dr. Baekeland observed the foamy structure with which phenolics usually cure and founded an industry by putting enough pressure on the material so that it would not foam when it cured. Now we are trying to reverse this process and make good controlled foams. During the last 20 years, however, enough information has accumulated so that the rules are quite well known and this has resulted in constantly accelerated progress. Those of us who participated in the war of 1917-18 have respect for the help of synthetics which, for the first time, received important applications in the recent war: copolymer rubber, polyethylene for coaxial and high frequency uses, vinyl chloride for nonflammable cable and raincoats, butyl rubber for inner tubes and low temperature flexible garments, nylon for parachute cords and aviation tire fabric, high tenacity rayon for tire cord, methacrylate transparents for airplanes, glass fiber and polyester resins for body armor, ethyl cellulose for fuses, and the newer type polymers to meet the exacting requirements of the bomb program.

Abrasion Resistance

In all of these cases, a particular plastic is used because it has some outstanding set of properties. Our assault on nature is a continuous effort to extend these properties, find new combinations and hence develop many more suitable materials. Take the question of hardness and its accompanying characteristics of mar resistance. Previously, we felt that resistance to scratching involved either a very hard surface which could not be scratched by impinging objects, or else a rubbery surface from which sharp particles would rebound. Now Mr. Collyer of Godfrey Cabot, Inc., has shown in a paper before the Chemical Society in May, 1947, that silicone fluids compounded in rubber by admixture with carbon black apparently bloom to the surface sufficiently to give a very low co-efficient of friction. A scratching agent slides off: it cannot get a foothold so it cannot dig little particles out of the surface. Of course, we do not ordinarily think of organic compounds as being hard anyway. When this point is raised, however, you can always point out that the diamond, whose crystal structure is known, does pretty well on the question of hardness. In our own laboratories, we have worked on the ancient problem of making flexible transparents approach the hardness of glass. We are still far short of this goal, but have been able to apply nitrogenous coatings to cellulosics so that they give a scratch resistance which our good friend Dr. Kline has characterized as "the best yet seen by the Bureau." We would still like to get better flexibility and may have to make compromises to obtain it. There are, of course, various other means of helping the abrasion resistance of transparents; these are often based on silicon containing materials.

Heat Resistance

We think of most tough organic materials as long chain molecules, like miniature ropes, which occasionally may be tied to each other by cross knots, technically cross links. This chemical cross-linking offers a means of increasing heat resistance which has long been an objective in the plastics field. Good gain has been made from numerous directions. Nitrogen in the molecule is sometimes helpful. The polyamide type of structure is excellent in heat resistance, and Dr. Elmer K. Bolton has pointed out it was the substitution of the amide linkage for the ester linkage in the chain which produced the temperature resistance necessary for this important hosiery fiber. Dr. Carothers had already shown that to get the enormously long molecule, it was necessary to have a building unit of 9 atoms or more long and to use carefully balanced reactants so that the chain would not be stopped at too short a length. Heat resistance has also been accomplished by introducing silicon into the chain, by using specially resistant molecular building blocks as are found in acrylic polymers or in some cases with benzene ring structures, and by the replacement of hydrogen on a chain by fluorine. The silicone work offers another example of ingenuity. Silicon is tetravalent, that is, has four arms and is very anxious to bond to itself through oxygen. On the other hand, when long molecules are cross-linked in a third dimension, the resulting structures may well get brittle, so it is customary to "immobilize" two of the silicon valences against cross-linkage by satisfying them with monovalent chemical groups such as methyl or phenyl which cannot tie them up further. You are all familiar with the silicone rubber gaskets which maintained their rubbery structure at high temperatures. It also appears from work from Goodrich that cross-linked acrylates can be used where this high temperature rubberiness is desired.

The use of fluorine in place of hydrogen on the chain molecule is exemplified by du Pont's Teflon, polytetrafluoroethylene. The high softening point of this and of the polyamide structures is ascribed to an especially strong attraction between closely spaced linear molecules resulting from a judicious swapping or sharing of electrons between the adjacent chains. It thus appears that heat resistance can be obtained both by the inclusion of so-called inorganic atoms in the chain, and by hanging various types of atoms off the chain. Nature has furnished us good heat resistant fiber in asbestos. Owens-Corning Fiberglas has done an outstanding piece of work in glass fibers and, of course, cellulose itself has limited heat resistance along with its water swelling properties.

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PLASTICS REVIEW

(Continued from page 5)

Textile Fibers

The synthetic fiber industry has made broad use of the above principles; in nylon, especially the condensation product of hexa-methylene diamine and adipic acid, and in polyacrylonitrile, the so-called Fiber A of du Pont. Two other important possibilities in this field derive from the isocyanates as worked out by Dr. Bayer in Germany and Terylene, sponsored by the Manchester Cotton Spinners Association and Imperial Chemical Industries in England. In the case of the isocyanates, hexamethylene diamine is reacted with phosgene to give hexamethylene di-iso-cyanate. This is then condensed with 1,4 butanediol according to the principles of Dr. Carothers to give a material melting at 184°C (363°F) with molecular weight of 10,000 to 12,000. As a tensile fiber, the water absorption is 1/3 to 1/5 of the 6-6 nylon. A similar low water absorption was shown by the condensation polymer Terylene made by condensing terephthalic acid and ethylene glycol. It was rather unexpected that a polymer of this type would be so high melting compared to the conventional condensation of ordinary phthalic anhydride and glycols. Of course, in this latter case, there is also a strong possibility of ringing of the molecule.

Most of the above fiber types involve nitrogen and have certain similarities to the proteins which are built up from amino acids. In these cases and the recently reported synthesis of protein-like materials, chemists still have to use much more drastic means of synthesis than nature employs every day in the ordinary animal synthesizing all kinds of these things smoothly and effectively at body temperature. We can still learn something from hair, skin, and gizzards.

Rubber

In the related field of unsaturate vinyl type copolymers some progress has indeed been made toward synthesis at low temperatures. You have recently seen much publicity on the improved rubber from low-temperature polymerization. This is accomplished by adding to the regular polymerization mixtures a very small amount of reducing agent, such as a hydrosulfite or ferrocyanide to reduce some of the competitive reactions which slow the polymerization. Along with Messrs. Gloor and Goggin, I first ran into this principle during the investigations in 1945 of the German plastics industry. It was so striking to us at the time that we gave it special emphasis in reporting back to the Quartermaster. It applies to a great many polymerizations beside the synthetic rubber type.

Foams

The plastics industry has also been trying to reduce weight. One method of attack is to produce a structure of good strength which is full of voids: this has lead to the development of a vast number of foamed materials. You are already familiar with the phenolic and urea foams which have been used for heat insulation, with the styrofoam produced by Dow Chemical Company which has good mechanical strength, weighs down to 3 pounds per cubic foot, and has received a good acceptance in the refrigerator insulations; and the stout light cellular cellulose acetate produced by du Pont under the name of Strux. This has recently received considerable favorable notice as a fire-proofing structure when sandwiched between metal sheets. Incandescent heat on one side of a panel is blocked for a considerable period from the other side. American investigators in Germany also reported nitrogen generating foaming agents for use in plasticized vinyl chloride to give nonsinkable structures. Of course, an enormous amount of foamed rubber is made by whipping air into latex. It is standard in the automotive and seating industries. A more versatile foam also reported from Germany was the one based on isocyanates. When a mixture is made of an alkyd which has some free carboxyls, that is, free acid, and an isocyanate, the resulting liquid can be poured; and shortly afterward it spontaneously foams, cures, and adheres. This makes it ideal, in spite of its expense, for filling irregularly shaped structures where good adhesion and resistance to heat are necessary. Here for example is a foam which has a density of about 14 pounds per cubic foot and which has stood extraordinary vibration tests. This piece of about 16 pounds per cubic foot density has an elastic modulus of 39,500 pounds per square inch, which will give you some idea of the structural excellence of this type. Obviously, there is possibility of wide variation by the use of different alkyds or different isocyanates.

Lower Costs

On the inflationary front, main progress has been made by keeping the cost trend of chemical materials downward. While normal commodities from pork chops to pants have all been rising in price, the old-time plastic materials have increased only slightly and the newer polymers such as synthetic rubber, vinyl chloride, polyethylene, and nylon have shown a downward trend. The key to this healthy condition has usually been new syntheses, such as the direct production of acrylics, as described by Reppe, from acetylene, carbon monoxide and an alcohol; or the recently publicized du Pont synthesis of adipic acid and hexamethylenediamine for nylon from butane dicyanide which is derived from tetrahydrofurane; or just plain increased production. The tetrahydrofurane just mentioned comes, in America, from the well-known aldehyde furfural whose main source at the moment is oat hulls. Furfural is readily derived from a vast number of agricultural wastes: it is responsible for the fragrant smell of new mown hay. Coal, air, and water may give way to hay, corn, oats, and the Department of Agriculture.

Applications

A few novel applications of the last few months have been the light reflecting bands and Connecticut license plates made by embedding glass beads in plastic sheet, the reverse printing of vinyl chloride film, some times involving lamination to other films such as practiced by P. B. Cow in England and U. S. Plywood Company in the United States; and the many new film materials which are now available for the protection of food and household objects. For example there is the Cryovac bag produced by Dewey and Almy Chemical Company from a vinyl vinylidene film. The continuously extruded tube is cut and heat-sealed to make the bag. Into this bag, you drop a chicken or other irregularly shaped food article, the mouth of the bag is placed over an exhausting nozzle so that a vacuum is drawn, the package is heat sealed, and then the whole thing is dipped in water at a 190°F. The oriented film then contracts to encase the chicken in a tight fitting skin so that all wrinkles and pockets are done away with. Much food packing is also done in polyethyene which is particularly suited to packaging problems where it is desired to have a minimum of moisture transfer, complete absence of taste and odor, and good flexibility at low temperatures.

For a long time, we wondered about the proper field for plastic bottles, which do not compete in price with glass bottles. That field has finally defined itself.

Polyethylene bottles are flexible so that they can be used for the dispensing of all types of powders and liquids where it is desirable to have a well localized application. They have been used mainly, in this country, for cosmetic preparations, but are equally good for tooth powders, DDT, sulfanilamide or anything else which can be handled as a fine dust. They are made by Plax Corporation.

NEW YORK OFFICIALS

Bottom row, l. to r.: Secretary—George Barron, Ideal Plastics Co.; President—Stanley Bindman, Noma Electric Corp; and National Councillor—Nicholas Fasano, Washington Molding Co., Inc.

Top Row, l. to r.: Directors—Ed Walsh, Plastic Molding Corp.; Bruno Wessinger, Wess Plastic Molds, Inc.; Saul Blitz, Noma Electric Corp.; and Palmer Humphrey, G. P. Humphrey Plastics.

AKIN SPEAKS ON INJECTION MOLDING OF NYLON AT NEW YORK

Report on Europe Given by Proske

By A. M. MERRILL

Some 44 members and guests of the New York Section attended a regular dinner meeting on April 12 at the Hotel Shelburne. Speaker of the evening was Russell B. Akin, E. I. du Pont de Nemours & Co., Inc., who discussed "Nylon as a Plastic Molding Material."

Dr. Akin emphasized that nylon is a generic name for a class of plastic materials, a dozen types being now in commercial production and providing a wide range of properties. The standard grade of nylon molding is FM-1, which is also the most rigid and heat resistant type. Nylon has five important properties: (1) high unloading temperature, being dimensionally stable to 450°F. although the service temperature is closer to 300° F. because of decreasing stiffness with increasing temperature; (2) does not contain plasticizer and is therefore not subject to bleeding and to low temperature embrittlement; (3) high toughness, the material being horny in nature; (4) excellent chemical resistance, being impervious to chlorinated and other solvents; and (5) excellent flow at injection temperatures, being fluid enough to flow into thin sections. Unlike most plastics, nylon has a sharp melting point and does not pass through a "mushy" stage. The FM-1 grade is fluid enough to drool from the injection nozzle between shots, and Dr. Akin recommended the use of a filter pack of special design to prevent such drooling. The filter pack also blocks the passage of unmelted nylon particles which would reduce the toughness of the molded piece. Nylon is quick-setting and temperature control of the mold is needed to prevent premature set-up.

The speaker also discussed some of the other nylon grades, including types suitable for wire and cable coverings, compression molding, and cements. Applications of the FM-1 standard grade include shock gears, bearings, grommets, and other products requiring toughness and heat and chemical resistance. Nylon is now available in 16 standard colors, and other new developments being studied include nylon sheeting capable of steam sterilization, crystal nylon, and more heat resistant grades. Dr. Akin pointed out that nylon is finding application in products hitherto considered unsuitable for plastics and is therefore extending the frontiers of the plastics field. The speaker concluded by showing slides on the chemistry of nylon, properties of the various grades, and some typical applications.

In addition to the featured speaker, an informal talk covering impressions received during a trip to Europe last fall was given by Section member Herbert Proske, Wheelco Instruments Co. Mr. Proske gave an interesting and informative talk on living and travel conditions in France, Belgium, Holland, Germany, England, Switzerland, Spain, and Portugal.

In the business session preceding the talks, reports were heard from the secretary-treasurer and the various committee chairmen. The program committee broached the idea of having a Christmas party instead of the regular December meeting, and comments were received from the members for action at the next meeting. Table favors were distributed through the courtesy of Arthur S. Jacobs, Renwal Mfg. Co., and the meeting concluded with a drawing for door prizes contributed by Plasticware, Inc., and "India Rubber World."

The Section's next meeting, to be held on May 10 at the Hotel Shelburne, will feature a talk by A. J. DeMatteo, Watson-Stillman Co., on "Selections and Maintenance of Hydraulic Presses (Both Compression and Injection Machines)." The June 14 meeting, also at the Hotel Shelburne, will include a talk by R. G. Newberg, Standard Oil Development Co., on the newly-developed S-Polymers, and a showing of the SPI film "A Scientific Approach to 'Better Plastics."

DETROIT HEARS BIGELOW ON ALKYDS

By WALTER KOZY

Lyon, Inc.

April Fool's Day was the date and Adrian Cotter's Tavern was the setting for the most recent meeting of the Detroit Section of the SPE. In the absence of Harry McGowan, Vice-President John Mickey of the Ford Motor Company conducted the meeting. Program Chairman Bill LaSage put the crowd in a hilarious mood with a special April Fool's Day prize raffle in which every one present received a gift.

Dr. Maurice H. Bigelow, the after-dinner speaker, sustained the mood of the group with an entertaining lecture and movie on the new alkyd molding powders developed by the Plaskon Division of Libby-Owens-Ford Glass Co. These themosetting powders are based on polyester type resins compounded with varying amounts of mineral fillers, pigments, etc. They have some remarkable properties which would indicate a bright future for them. Electrically, the materials have a phenomenal resistance to tracking and have a low loss factor. They are extremely fast curing and are very fluid at their molding temperatures (300-310°F). For this reason they can be handled with very light, inexpensive equipment. Movies were shown of a small air operated press which went through a complete molding cycle every ten seconds.

Other properties of the alkyd molding compounds include good dimensional stability, excellent abrasion resistance, good temperature resistance, and good resistance to organic solvents, fats, oils, acids, and water.

MICKEY AND KOZY OF DETROIT COUNSEL FUTURE ENGINEERS

By WALTER KOZY, *Lyon, Inc.*

Directors John Mickey of the Ford Motor Co. and Walter R. Kosy of Lyon, Inc. represented the SPE at the Fourteenth Annual Engineering and Science Vocational Guidance Meeting held in the Rackham Memorial Building on April 6, 1949. There were over 100 practicing engineers and scientists present and between 600 and 700 high school students.

The conference is an annual affair sponsored by the Engineering Society of Detroit co-operating with the Detroit Board of Education and the various technical societies of the city. Its object is to bring together the high school seniors of metropolitan Detroit to counsel with representatives of the various engineering and science professions in an effort to help the students decide whether they are interested in a career in engineering or science.

The program opened with an address by Dr. Ivan C. Crawford, Dean of the College of Engineering at the University of Michigan on the history of engineering education. Following the address, the students assembled at various locations in the Rackham Building where the technical societies had set up conference tables. Each senior had an opportunity for a personal interview with a practicing engineer or scientist from one or more of Detroit's industries.

The SPE table did a land office business for the three hours of the conference. A bibliography on plastics had been prepared for distribution and samples of injection molded pieces together with a small plastic press were on display. The questions asked by the students showed that the young people had a genuine interest in the field of plastics and the possibilities of making a living therefrom.

Altogether the meeting was highly successful. Mr. Mickey and this correspondent enjoyed talking to these serious young people and most of the students profited from their contacts. The SPE had a fine opportunity to promote the cause of plastics engineering and plastics education to the general public, and it did.

Walter R. Kosy, Chemical Engineer, Lyon, Inc., demonstrating principles of injection molding at Detroit Vocational Guidance Conference. (Detroit Times photo)

MOLD STEELS AND DESIGN OHIO TOPICS

The first speaker at the April 14th meeting of the Central Ohio Section was Jack Morrison of Detroit Mold Engineering who spoke on the "Selection of Material for Plastics Molds." The proper mold material is of first importance, he stated, and the choice will be determined by several factors, (1) the method of making the mold, whether by hobbing or other method (2) whether the mold is for injection or compression molding purposes, since a steel with good compressive strength is not always also good in shear resistance (3) purpose of the mold, whether it be for short runs, or for running until the mold wears out, and whether the mold must have the highest possible degree of smoothness or not and (4) economics, or cost of mold per molded unit. Mr. Morrison also discussed the use of copper beryllium alloy as a mold material, and suggested the possibilities of nickel-beryllium alloys, which are now still in the research stage of development.

Mr. Alfred F. Fukal, consulting industrial designer and development engineer spoke on "The Place of Functional Design in Industry." The production of any successful commercial article rests on three bases, Mr. Fukal said. The first is economic analysis which will reveal the potential market, the number and success of competitors in the field, and the selling price and maximum allowed

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cost price of the article. The second basis is functional design; which determines the most efficient shape of the article, so that the article will not only perform adequately, but be the best possible. The third basis is esthetic, which means the design of the article which adds to eye-appeal.

Prior to the talks, president Burkhart brought before the members the suggestion of the local council that the dues apportionment which is now 50% to the local section and 50% to the national office, be changed so as to give the national 60%. After discussion, it was moved and passed that the Central Ohio Section go on record as favoring the change in apportionment, and that such record be sent to the National Council.

PENN PERSONALS

By PAUL ROCHE

William C. Conroy, Assistant Sales Manager, Erie Resistor Corp. (Plastics Div'n.), Erie, Penna., has just departed for a vacation trip to England. We understand that Bill will see his mother there for the first time in over 20 years, and we all share his pleasure in the anticipation of this reunion.

The Northwestern Pennsylvania Section has just received the membership application of L. Charles Brandt, manager of Brandt and Son, Erie, Penna. This tool plant has earned a reputation for exceptional workmanship and reliability not only in plastics molds but in metalworking dies as well. "Chuck" was initiated by attending the March meeting in Warren Pennsylvania when Mr. M. A. Nichols of Manco Product Co., addressed the group on beryllium copper cavities. He initiated some of the oldsters in retaliation by returning from Warren to Erie via Titusville. The extra couple of hours travel are ok if you like to ride, which is not everyone's preference after midnight in a snowstorm when the gasoline gauge reads empty.

Jerry C. Stokes, President of Perry Plastics Inc., of Erie, Pennsylvania announces the appointment of Wm. B. Hoey as representative in the Michigan area. Bill Hoey is Past National President of the S.P.E. as well as past Executive Secretary. Jerry Stokes is 1949 Vice President of the N. W., Pa., Section.

Byrd Tool & Mold Co., Erie, Penna., in its progressive expansion program has installed a 1,000 ton hobbing press for cold hobbing in steel. William S. Byrd, President, (and director, N. W. Pa., Section of S.P.E.) announces also the addition to their engineering staff, Mr. R. W. Welch, S.P.E. member, formerly of Nosco Plastics and Continental Rubber Works.

PHILLY GIVES EXHIBIT

By RICHARD BISHOP

The **PHILADELPHIA SECTION** of the Society of Plastics Engineers Inc. in cooperation with Gimbel Brothers of Philadelphia, is sponsoring a week long Public Plastics Show. This is to be opened to the public from May 23rd. to May 28th. It is the purpose of this display better to educate the public on the plastic materials which are furnished for the home and for public use. There will be about 12 booths set up in Gimbels Auditorium where the plastic items of interest to the housewife and merchandiser will be permanently open for inspection. The Local Section Members are sponsoring a booth which will feature the items from local firms too small for an elaborate display. A number of the large merchandise suppliers are gladly donating their materials and experienced men to this public education show.

The local monthly meeting at the same time will be our yearly Ladies Night Meeting and attendance of 200 or more is expected for our specially prepared entertainment program.

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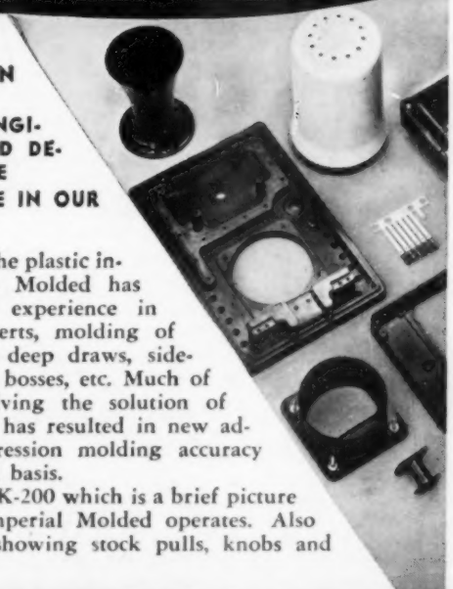

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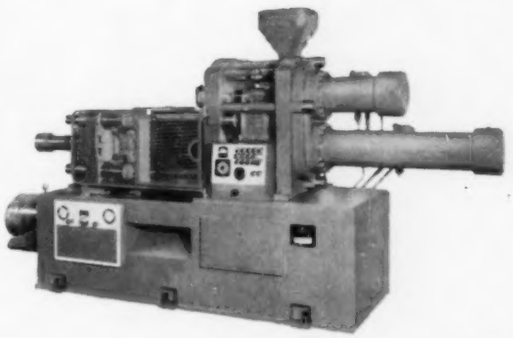

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WILCOX AT UPPER MIDWEST

Sketches of Local Plastics Activities and Personalities

By E. W. ULRICH

UPPER MIDWEST will meet May 9th for a plant visit at Minneapolis-Honeywell. After the Summer recess the September meeting will feature J. H. DuBois, past National President and noted authority on plastics.

Last Meeting

We had excellent attendance and an enthusiastic audience for Mr. Wilcox of G.E. He gave the Section a preview of what automatic compression molding may be like. Cycles as low as seven seconds have been achieved in present experimental models. He said a little about low pressure molding using glass fibre preforms and G.E.'s venture in this field.

On the extrusion of nylon he emphasized the need for high temperatures and the extreme difficulty of removing from surfaces to which it happens to stick during the extrusion process.

Guess Who!

He has a booming laugh and a friendly smile for everybody. He drives a Chrysler, dabbles in photography, fishing, hunting. He has a knack for picking up bargains in radios, stocks, and real estate—not extensively but occasionally. He has a boy in high school and a girl and boy in grade school.

He is a 1926 graduate of the U. of M. Chemical Engineering and has lived in St. Paul ever since. He is a division manager in one of our larger companies. He has contributed heavily to the solution of many technical problems including several in the plastics field. (see answer at end of story.)

Jobs Wanted

We received a letter from Robert R. Stenger, Jr., Instructor in Mechanical Engineering Department, in which he asks the assistance of the Section in placing students for summer work in the plastics field. If you have job opportunities, please contact Mr. Stenger.

Local Plastics Firms

Acme Plastics—

Acme plastics was established in Minneapolis in 1945 by C. L. Barker. They do compression and injection molding. They have two 150 ton compression units and an eight ounce Reed-Prentice injection unit.

Original intentions were to manufacture only staple proprietary items, mainly in the housewares field, and the first item was a three section baby plate. Later customs molding was accepted. An entry into the premium merchandise field was made with a polystyrene cake knife for Pillsbury Mills to the extent of 1,400,000 pieces. This cake knife has been continued as a stock item, being used also on smaller premium deals, as well as in the advertising specialties field.

Current sales are principally premium and preprietary, with modest amounts of contract and custom molding.

Brown & Bigelow

Brown & Bigelow is one of the oldest and leading manufactures of advertising material. The company was established in 1896 and pioneered the field of advertising calendars, and has since become world known in its field.

The company classifies its present products as paper products, engraved items, playing cards, leather goods, and novelties. World famous artists are employed for the pictures. Engraved items include greeting cards, etchings, etc. Leather items include memo pads, bill folds, travel kits, etc.

Brown & Bigelow is the largest producer of playing cards.

The novelty items include a wide variety of products, such as desk pads, thermometers, rulers, knives, etc. This classification offers a wide application for plastics.

Brown & Bigelow obtained its first compression molding machine in 1933, and its first injection molding machine in 1935, and has kept abreast of the latest developments in the plastics field.

Brown & Bigelow is among the best known Minnesota companies, and enjoys a favorable world wide reputation.

We are indebted to Paul Felt for the transcript which furnished the basis of the above summary.

Answer To "Guess Who"

Mr. J. H. Kugler, manager of Special Products Division of 3M Co. (laboratories at St. Paul and plant at Hastings). He contributed extensively to the development of Wetodry Sandpaper and organized the Special Products Division (primarily, resins production). He also assisted in the early development of "SCOTCH" tapes and "SCOTCHLITE."

Bulletin

Contributions of information please. Call E. W. Ulrich at Ne. 7945—ext. 483.

Section Notes . . .

BALTIMORE-WASHINGTON met at the Johns Hopkins University April 19th to hear George Sollenberger of Rohm & Haas speak on Plexene T A, a new molding composition.

CLEVELAND met April 25th at the Tudor Arms Hotel to hear Dr. Gilbert Thiessen of the Koppers Company discuss the economics of plastics raw materials.

A membership drive at Cleveland is given a novel turn with the awarding of prizes on a point system. The contest is open to all Cleveland members except directors or committee chairmen, and closes with the June meeting. Each contestant is awarded ten points for a new member or suitably filled out application blank with initiation fee; three points are given for attendance at each SPE meeting. At the June meeting the member with the highest number of points will win $30, and the second prize will be $20. In case of ties, awards will be duplicated. To win any award, points must exceed 26.

EASTERN NEW ENGLAND met April 7th at the Hotel Vendome to hear Sanford Glick of the Monsanto Chemical Co. lecture on Polystyrene as an engineering material. A representative from the Boston Chamber of Commerce was present to discuss with us the proposed SPE National Convention.

Members are urged to encourage interested persons to come to our meetings and become acquainted with what we are trying to accomplish.

Mr. H. E. MacArthur found an enthusiastic audience in the **MIAMI VALLEY** Section for the presentation of "Designing and Making Painting Masks," at the Miami Valley Country Club in Dayton.

The **MIAMI VALLEY SECTION** had a drawing from Cincinnati as well as Indiana for the April meeting.

The next meeting will be a plant visitation of the Sorg Paper Plant at Middletown, Ohio, May 5, 1949.

The April meeting on finishes was under the program chairmanship of Mr. Jack Braden of the F. & F. Mold & Die Co. of Dayton.

The May meeting is being arranged by L. E. Cheyney of Middletown, Ohio.

NEWARK'S speakers at their April 13th meeting were Clifton Cox who spoke on "Motion Study Applied to the Plastics Industries" and F. W. Warner, engeering manager, plastics division, General Electric, who spoke on "Quality Control."

A Dinner Dance is scheduled for May 13, at the Newark Athletic Club. Make your reservations now!

P. I. T. I. JOINS WITH WEST COAST U.

Plastics Industries Technical Institute, world's oldest and largest exclusively plastics training institution, has been acquired by West Coast University, Los Angeles. The institute will become a department of West Coast University, a state chartered school, and will provide plastics instruction and training on the following three levels:

1. Plastics Processing as an option under the university three year course leading to a degree of Bachelor of Science in Mechanical Engineering.

2. An intensive four-month course in Plastics Fabrication for resident students. Eight months of additional advanced training leads to the Certificate of Plastics Technician.

3. A one-year Home Study course for up-grading plastics industry personnel, or as preparation for worthwhile employment in the industry.

West Coast University is one of the first major educational institutions to offer instruction on the technical and trade level, in addition to a concentrated program of courses in Mechanical and Electrical Engineering. Industry is cooperating wholeheartedly with the University in furthering this new concept of education.

WIARD AT TOLEDO TALKS SILICONES

By GEORGE A. TAYLOR

Mr. W. A. Wiard, technical representative, Dow Corning Corporation, will discuss silicones as mold release agents after 6:30 dinner at the Toledo Yacht Club on May 11.

Mr. Wiard will talk briefly on the history, chemistry, basic properties, and applications of the various forms of silicones. He will describe and evaluate three silicone materials: silicone fluid, emulsion and a grease-like compound, widely used mold release agents. He will discuss the main advantages of these silicones which make them ideal for mold lubricants. Their outstanding characteristics are their ability to withstand high heat mold temperatures, their relative inertness and incompatibility with inorganic materials, and their lubricity.

AMERICAN STANDARD ASSOCIATION WRITES "MODEL" SIGN CODE

Recognizing the extensive use of plastics by the sign industry, the American Standards Association has issued a model sign code containing sections dealing specifically with plastic faces, letters and decorations on all types of signs and displays. The code, titled "American Standard Building Code Requirements for Signs and Outdoor Display Structures, A60.1, is sponsored by the American Muncipal Association and the Outdoor Advertising Association of America and was prepared in collaboration with representatives of government agencies and industrial groups, including the sign industry and insurance organizations.

The Code Committee was aided in its investigation of plastics by the Rohm & Haas Company, manufacturer of Plexiglas acrylic plastic, who brought to the attention of the American Standards Association the wide-spread use being made of the product in outdoor electric signs, and assisted the Committee's fact-finding groups in the compilation of technical data.

Complete copies of the model sign code are available from the American Standards Association, 70 East 45th St., New York 17, N. Y.

MOLDS AT ROCHESTER

By A. F. PUNDT

The Rochester, New York Section, Society of Plastics Engineers held a dinner meeting March 15th at 6:30 P.M. at the Elks Club, Rochester, New York. The meeting was presided over by the President, Vernon E. Whitman of Graflex Incorporated, and featured a talk on "Tru-Cast Beryllium Copper Molds" by Mr. M. K. Nickols, Manco Products, Melvindale, Michigan.

A movie on the Rockford Hy-Jector was also shown by Mr. Earl Johnson and Mr. Frank Morris of the Rockford Machine Tool Company.

The next meeting of the Section was April 19, at which Dr. M. H. Bigelow, Director of Technical Service Plaskon Division, Libbey-Owens-Ford Glass Co., spoke on "Alkyd Hot Molding Compounds."

CHICAGO TO MEET

By C. R. WEBSTER

The Chicago Section of SPE will hold its next monthly meeting jointly with the SPI on Wednesday, May 11th. The main speaker of the evening is Louis H. Barnett of Loma Plastics, Inc., Fort Worth, Texas. Mr. Barnett, who is the national director from the North Texas Section of SPE, plans to discuss a topic of great interest—"Large strain-free injection moldings by the pin point process." His talk is to be illustrated by a movie which will show many of the details of this process. Interested members of both SPE, SPI and their guests are invited to attend this meeting, which is the final business meeting for both societies until fall. Three golf outings are scheduled for the summer, the exact dates will be announced in a future mailing to the members.

N.W. PENNSYLVANIA

NORTHWEST PENNSYLVANIA was host to Harlow Klema of the George Gorton Machine Company, who spoke on Mold Building and showed the Gorton movie "An Exact Duplicate," at the April 14th meeting at the Grotto Club in Erie.

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Section Notes . . .

PHILADELPHIA met April 19th to hear an illustrated discussion on "Design Improvement for Saleability and Function of Plastic Items" by Carl Sundberg of Sundberg and Ferrar. Door prizes were given.

SOUTH TEXAS met in Houston March 17th to hear W. T. Reedy of Rohm & Haas discuss New Architectural Uses of Plexiglass. Mr. Reedy stated that three major markets for acrylics had been developed since the war; display signs, lighting fixtures, and architectural forms. He showed slides of store fronts, edge lit murals and the like, and discussed methods of fabrication for the most recent uses of plexiglass in these three fields.

TOLEDO met April 13th at the Toledo Yacht Club, where Dr. Louis C. Rubin spoke on Kel-F and Kel-Flo.

CHICAGO met April 13th to hear William H. McHale of American Cyanamid Company speak on the "Use of Melamine Resins in Compression Molded Tableware." The meeting was held jointly with SPI.

DUREZ ANNOUNCES NEW COMPOUND

Durez Plastics & Chemicals, Inc., North Tonawanda, New York, has just announced Durez 13527, a new phenolic molding compound which can be molded at one-third the pressure normally required for compression molding. This material is a general-purpose type, although its physical properties are said to be superior to the average general-purpose compounds and its surface finish to be equally good. Durez 13527 was formulated especially to enable molders to use their present press capacity for much larger molded pieces than heretofore was possible.

Because of the present growing demand for large molded phenolic pieces, especially in the radio, television and air conditioning fields, the heavy-press capacity of the industry is being severely taxed. There is, however, a large number of smaller presses that can be used for some large parts in conjunction with Durez 13527. For example, consider a cabinet 24 x 24 x 24 inches deep. Using regular soft general-purpose material, approximately 1600 tons pressure would be required, asuming high frequency preheat and a 15-second mold closing time. The same cabinet produced from the new low-pressure material could be molded at slightly over 500 tons pressure.

At present, Durez 13527 is available in black and brown only. Physical and electrical property date and further information are available from the manufacturer on request. Say you saw it in the *SPE News!*

VEVERIT ON PLASTICS DESIGN AT QUEBEC

By GEORGE H. MARTIN

A talk on Plastics Industrial Design by James V. Veverit of James V. Veverit & Associates, Buffalo, N. Y., was well received by the members and guests of the Quebec Section, S.P.E., on the evening of March 23, 1949, in the C-I-L Theatre, 625 Dorchester St. W., Montreal.

The speaker traced a wide variety of plastics products from the design stage through the production, illustrating his points with many full color renditions and samples of the finished article.

The audience was given a peek at a few products, still in the development stage in the U. S.

Mr. Veverit challenged plastics engineers with designs for products where the client had asked for plastics but because of the lack of either a satisfactory material or technique had to produce the article in some other material with less desirable characteristics.

In conclusion Mr. Veverit mentioned that the return of keen competition in most lines in the U. S. was reflected in increased activity among designers.

W. NEW ENGLAND

(Continued from page 4)

estimated that there are approximately one thousand molding machines in England, compared with approximately three thousand in the United States. The average injection machine in England is approximately three ounces, and the largest is sixteen ounces. They are working on a twenty-four ounce machine, but to the speaker's knowledge, it is not as yet completed.

In spite of the present material shortages, injection plants are springing up all over England. The largest nylon plant in the world has just been completed in South Wales.

In summing up, Mr. Thomas has concluded that although the industry of Europe in general is not too good, it is definitely improving to a point, in England at least, where we can soon expect some serious competition.

The second speaker of the evening, Mr. Walter J. A. Connor of the U. S. Fibre and Plastics Corporation, chose for his talk "Trouble Shooting In Molding Thermo-Plastics."

Mr. Connor, former sales manager of Koppers Plastic Division, presented a very informative talk covering the following common problems that are encountered by the molders of polystyrene, cellulose acetate, and ethyl cellulose: molded pieces incomplete or short; mold flashes; pieces sticking in cavity; sticking of sprue; pieces warping; sink marks; material flowing out of nozzle between cycles; flow marks; surface lamination; poor welding; bubbles in interior of molded piece; dullness or roughness on surface; waviness of surface; molded parts are weak or brittle; and cloudy surface on molding.

The speaker analyzed most of these problems individually, thereby giving the audience a very good cross-section of the problems and their solutions.

Mr. Connor concluded that undoubtedly there are problems which cannot be solved by some of the well known methods and must be considered as individual problems for which individual solutions must be devised.

A very spirited discussion period followed.

NEW ORLEANS HEARS BOEHM

By RALPH F. CHAMBERS

Dr. Robert M. Boehm, Director of Research, Masonite Corporation, Laurel, Mississippi, addressed the regular monthly meeting of the Louisiana Engineering Society and the New Orleans Section of The Society of Plastics Engineers at the St. Charles Hotel April 17. A large crowd heard Dr. Boehm speak on "The Development of Plastic Panels from Wood."

The speaker told of the process of making plastic wall panls from wood pulp. He outlined why southern wood pulp in the not too distant future will place the South among the great industrial centers of the world. He stated that by treating wood with different chemicals, more than a score of basic products is obtained from wood structure. From the masonite process alone, a family of products has been derived and produced covering all phases of building construction work.

A new product known as Benelex 100 has been developed by the Masonite Corporation for use as electrical panels which has outstanding characteristics and shows marked superiority over old type dielectric boards. Electrical boards made of Benelex 100 will not form electrical arc conducting paths, making it possible to cut down on the size and weight of switchboards in industrial plants, surface vessels, submarines and airplanes. This announcement came as a surprise to the audience and was greeted with a great deal of enthusiasm and comments.

Dr. Boehm had samples of various types of masonite, showing many improvements over old type materials.

After a spirited discussion of the various types of plastic materials obtained from wood pulp, the meeting was adjourned.

1949
PRIZE PAPER CONTEST

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NOVEMBER FIRST

is the deadline. All entries must be submitted on or before November, 1, 1949, either to the president of any local SPE section, or directly to the Society of Plastics Engineers, 409 Security Bank Bldg., Athens, Ohio. Most local sections are offering substantial prizes for best papers submitted to that section. These local winners are then sent to the National SPE Prize Paper Contest judges, on or before November 15. Six copies of each paper are required to facilitate judging.

THE PAPER

may be on any subject dealing with plastics; molding, mold design, product design, equipment, materials handling, chemistry, etc. The paper should not exceed 5,000 words, exclusive of charts and graphs. The paper should display originality and may not have been previously published. SPE will hold first publication rights on all prize-winning papers, but may release these rights on written request.

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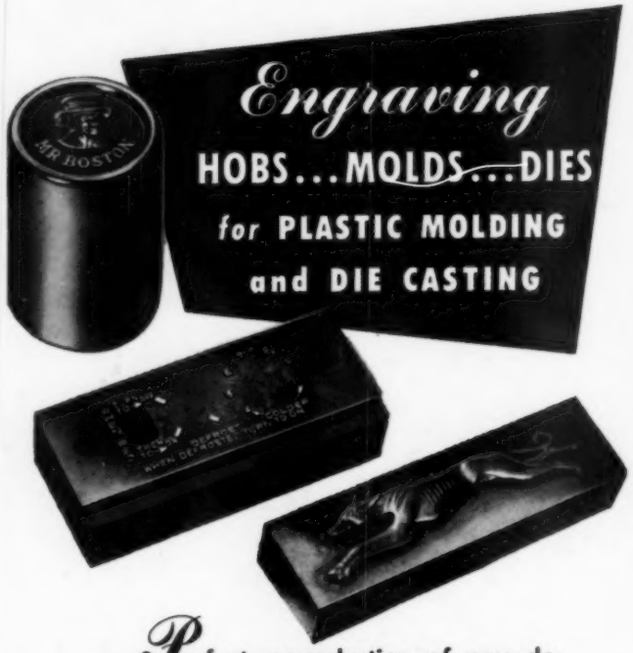

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